

Mills, Michael K. (2008) *Environmentally-active consumers' preferences for zero-emission vehicles: public sector and marketing implications*. Journal of Nonprofit and Public Sector Marketing, 19 (1). pp. 1-33. ISSN 1049-5142)

Table 1  
- SAMPLE PROFILE -

|   |              |                                       |              |
|---|--------------|---------------------------------------|--------------|
| <b>SEX:</b>   |              | <b>WHERE RESIDE:</b>                  |              |
| Male  | 47%          | Northern California                   | 52%          |
| Female  | 53%          | Southern California                   | 48%          |
| <b>AGE:</b>   |              | <b>MARITAL STATUS:</b>                |              |
| 21-35   | 39%          | Married                               | 64%          |
| 36-50   | 32%          | Single (never married)                | 20%          |
| 51-70   | 29%          | Separated/Divorced/Widowed            | 16%          |
| Mean age  | 41 ½         |                                       |              |
| <b>RESIDENCE:</b>   |              | <b>INCOME</b>                         |              |
| Single Family Home  | 64%          | \$50,000-\$59,999                     | 52%          |
| Apartment   | 18%          | \$60,000-\$99,999                     | 34%          |
| Condo/Duplex/Other  | 18%          | \$100,000 or more                     | 14%          |
|   |              | Average income                        | \$70,800     |
| <b>NUMBER OF VEHICLES OWN:</b>                              |              | <b>AUTO CLUB MEMBER:</b>              |              |
| Two   | 66%          | Yes                                   | 71%          |
| Three   | 21%          | No                                    | 29%          |
| Four +  | 13%          |                                       |              |
| Average   | 2.6          |                                       |              |
| <b>MILES DRIVE PRIMARY VEHICLE:</b>                         |              | <b>MILES DRIVE SECONDARY VEHICLE:</b> |              |
| Under 10,000  | 22%          | Under 10,000                          | 52%          |
| 10,000 – 19,999   | 52%          | 10,000 – 19,999                       | 40%          |
| 20,000 or more  | 26%          | 20,000 or more                        | 8%           |
| Mean  | 16,300 miles | Mean                                  | 10,600 miles |
| <b>CONTRIBUTED VERY SIG.TIME &amp;/OR MONEY TO ECOLOGY:</b> |              | <b>RACE</b>                           |              |
|   | 54%          | Caucasian/White                       | 87%          |
|   |              | Black/Afro American                   | 5%           |
|   |              | Hispanic                              | 4%           |
|   |              | Asian                                 | 2%           |
|   |              | American Indian                       | 2%           |

Table 2  
CLUSTER GROUP NUMBER

| VEHICLE             | TOTAL | 1           | 2                         | 3                      |
|---------------------|-------|-------------|---------------------------|------------------------|
|                     |       | (ICE/SPACE) | (SPEED/TIME/<br>LOW COST) | (POLLUTION/<br>SAFETY) |
| Mid-Sized (HIGH)    | 53%   | 61%         | 50%                       | 48%                    |
| Mid-Sized (LOW)     | 15%   | 13%         | 14%                       | 17%                    |
| SMALL & COMFORTABLE | 24%   | 23%         | 26%                       | 23%                    |
| SMALL & SPARTAN     | 8%    | 3%          | 10%                       | 12%                    |

Figure 1  
**- TRADE-OFF ATTRIBUTES FOR ELECTRIC VEHICLE STUDY -**

**ELECTRIC PACKAGE:**

Electric Windows/Mirrors/Seats  
No Package

**SEATING CAPACITY:**

2-No Back Seat  
4-Small Back Seat  
4/5-Full Back Seat

**TOP CRUISING SPEED:**

55 MPH  
70 MPH  
85 MPH

**TAX INCENTIVES/REBATES:**

None  
10% Off Electric Bill  
10% Off Electric Bill & \$1500 Credit on Taxes

**RECHARGE TIME:**

3-4 Hours  
7-8 Hours  
11-12 Hours

**SAFETY SPECS:**

Meet US Gov't Requirements  
Exceed US Requirements by 10%  
Exceed US Requirements by 25%

**AIR BAGS & ABS:**

Has Air Bag & ABS  
Has Air Bag Only  
Has ABS Only  
Neither

**PURCHASE PRICE:**

\$ 7,000  
\$11,000  
\$15,000  
\$19,000  
\$23,000

**INTERIOR:**

Functional  
Practical  
Space Ship Like  
"Office-On-Wheels"  
Luxurious

**AIR CONDITIONING:**

Air Conditioning  
No Air Conditioning

**STYLING:**

Looks like Conventional Car.  
Similar to Conventional./Can Tell Electric  
Unique, But Attractive

**CARGO SPACE:**

23 Grocery Bags  
5-6 Grocery Bags  
8-10 Grocery Bags

**REDUCES TOXIC EMISSIONS:**

100%  
67%  
33%

**ACCELERATION:**

More Than Adequate  
Comparable to Conventional.  
Barely Acceptable

**BATTERY RANGE:**

50 Miles  
100 Miles  
150 Miles  
200 Miles

**POWER SOURCE:**

Electric Battery Only  
Electric & Solar Batteries  
Electric & Methanol Engine  
Electric & Gasoline Engine

**OPERATING COSTS:**

25% Less than Conventional  
10% Less Than Conventional  
Same As Conventional  
10% More Than Conventional  
25% More Than Conventional

**ENDORSEMENTS:**

Consumer Reports  
Motor Trend Magazine  
AAA  
EPA  
Sierra Club  
DOT  
None

Figure 2  
- 10 MOST IMPORTANT TRADE-OFF ISSUES -

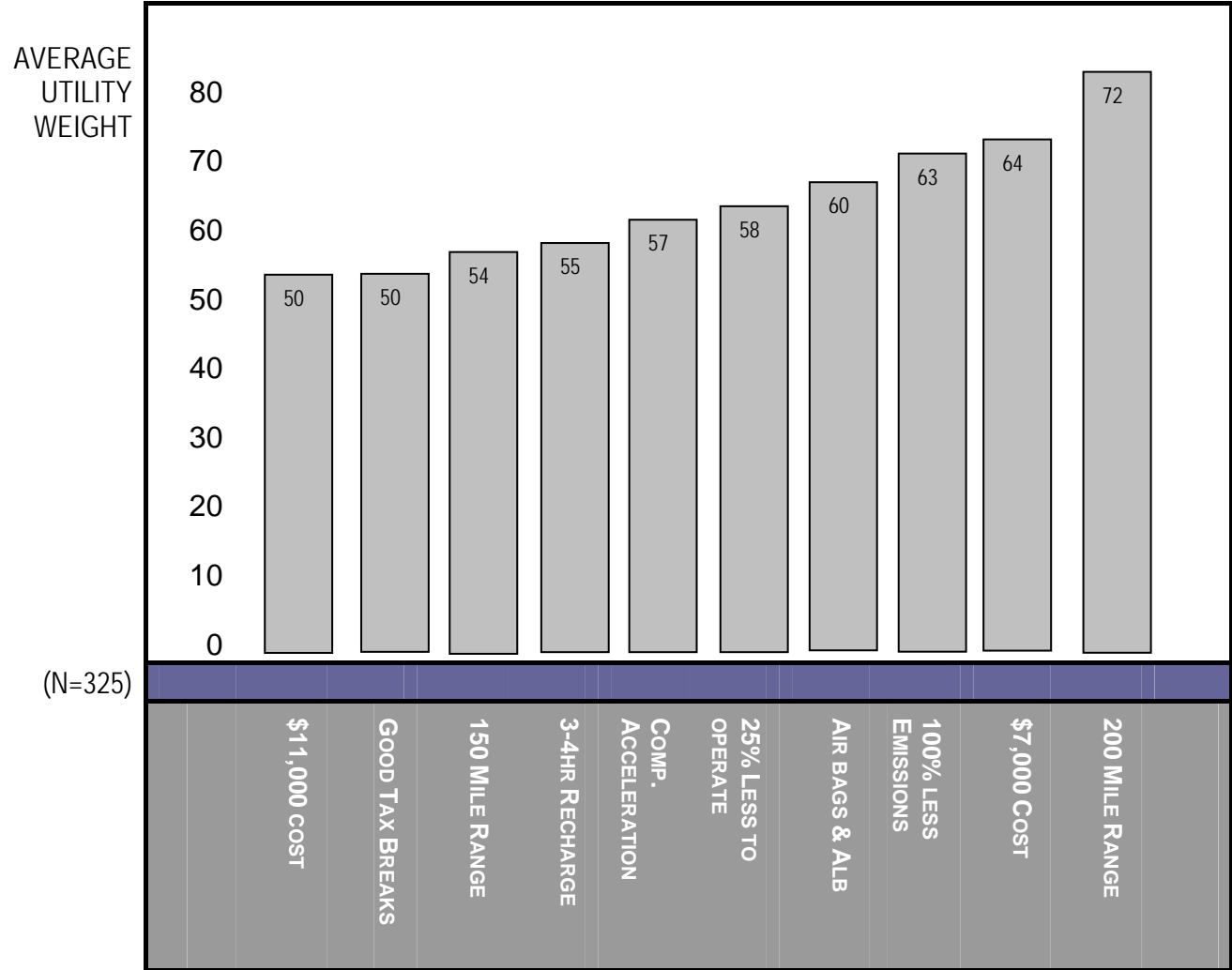


Figure 3  
ATTRIBUTE IMPORTANCE  
- ACCELERATION -

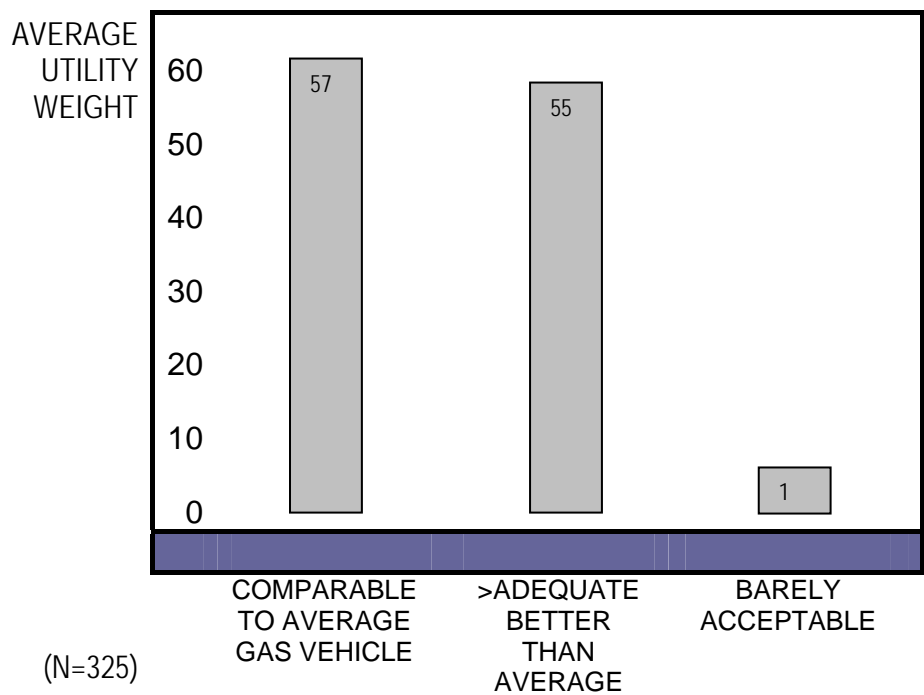


Figure 4  
**ATTRIBUTE IMPORTANCE**  
**- AIR BAG/ANTI-LOCK BRAKES -**

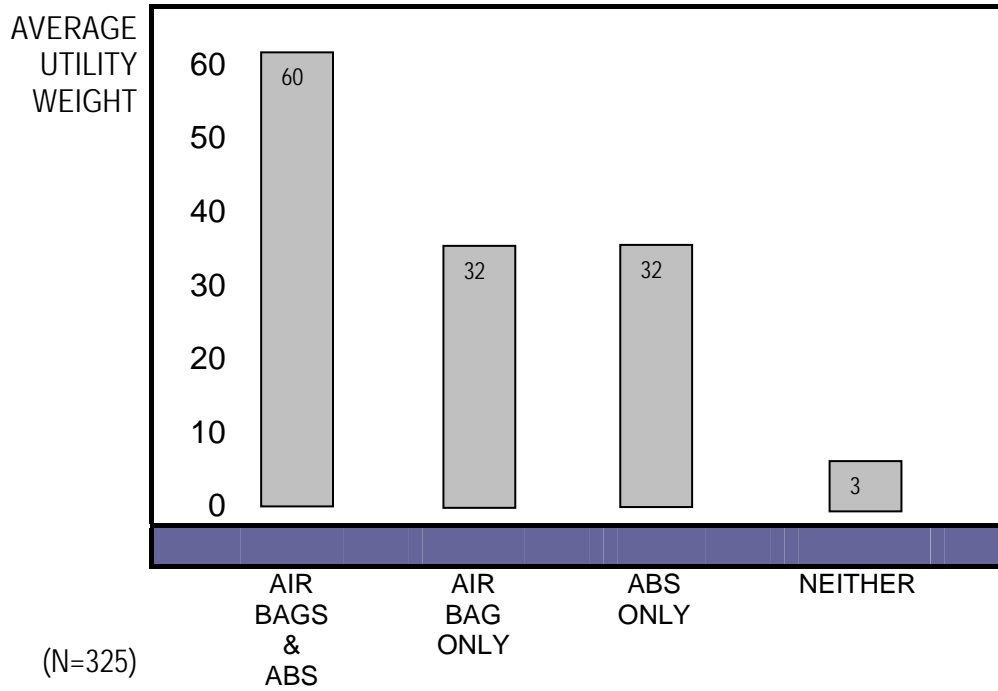


Figure 5  
**ATTRIBUTE IMPORTANCE**  
**- AIR CONDITIONING -**

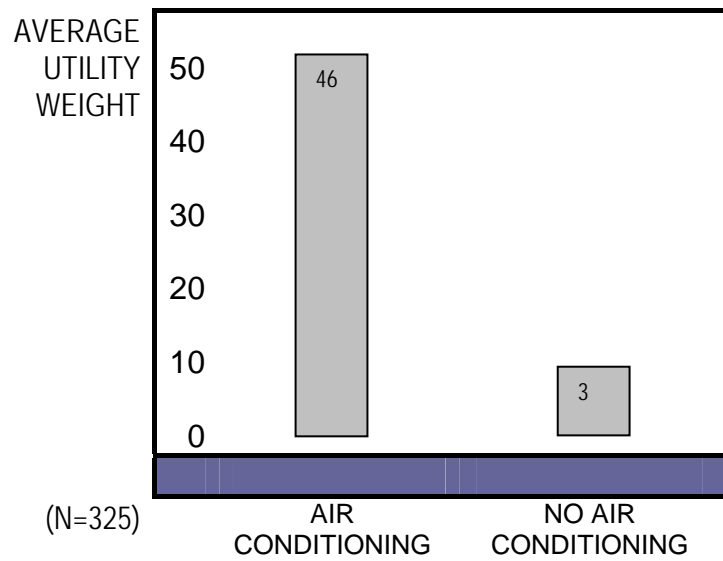


Figure 6  
**ATTRIBUTE IMPORTANCE**  
**- BATTERY RANGE -**

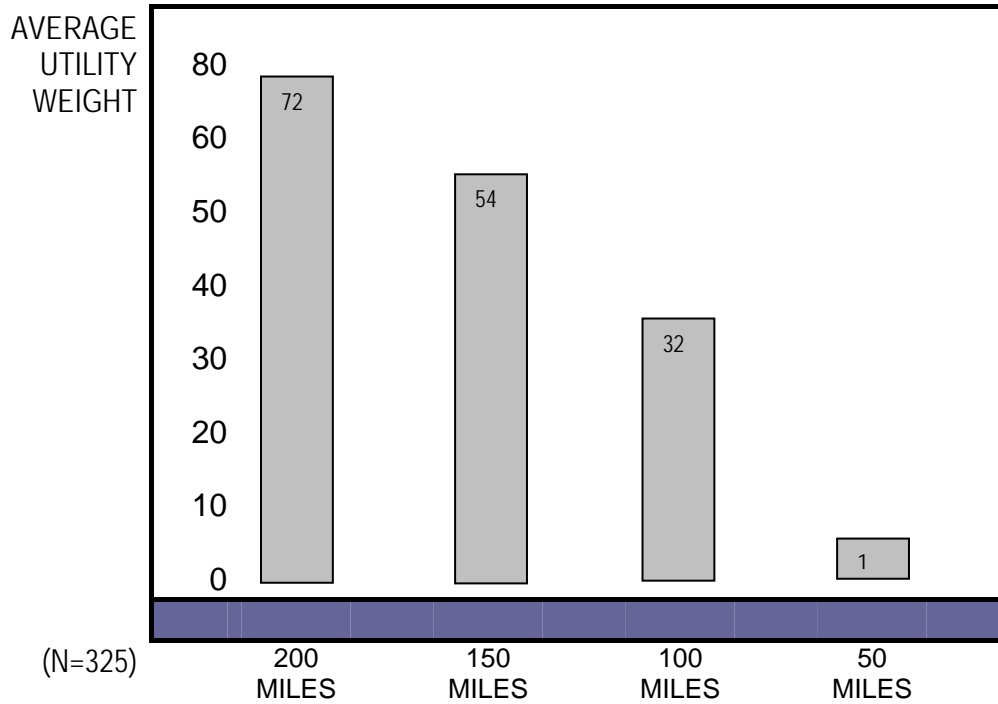


Figure 7  
**ATTRIBUTE IMPORTANCE**  
**- CARGO SPACE -**

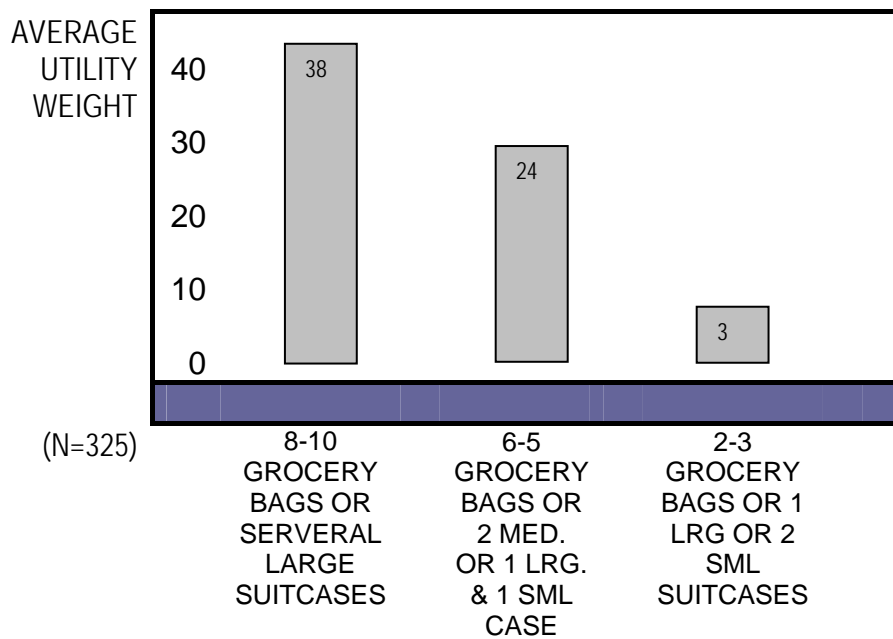


Figure 8  
**ATTRIBUTE IMPORTANCE**  
**- TOP CRUISING SPEED -**

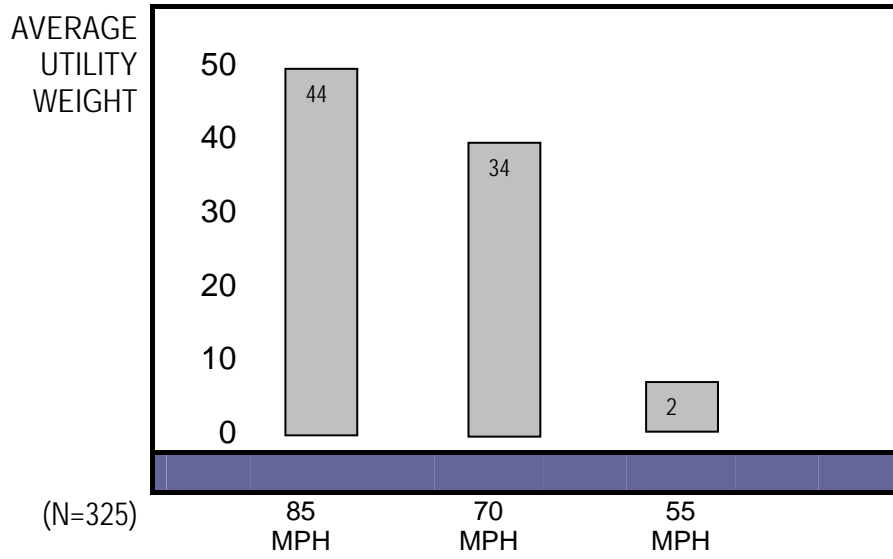


Figure 9  
**ATTRIBUTE IMPORTANCE**  
**- ELECTRIC PACKAGE -**

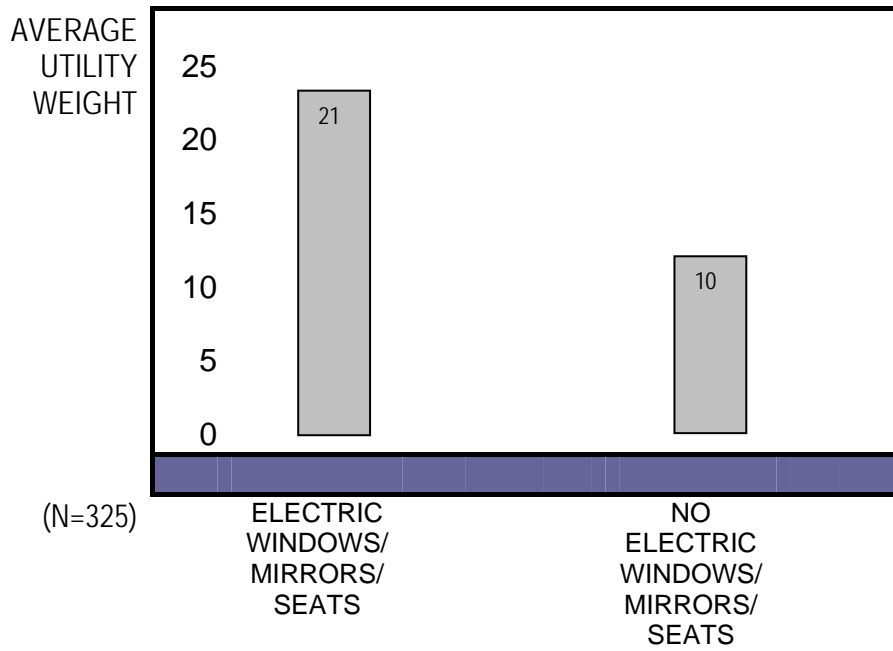


Figure 10  
**ATTRIBUTE IMPORTANCE**  
**- ELECTRIC PACKAGE -**

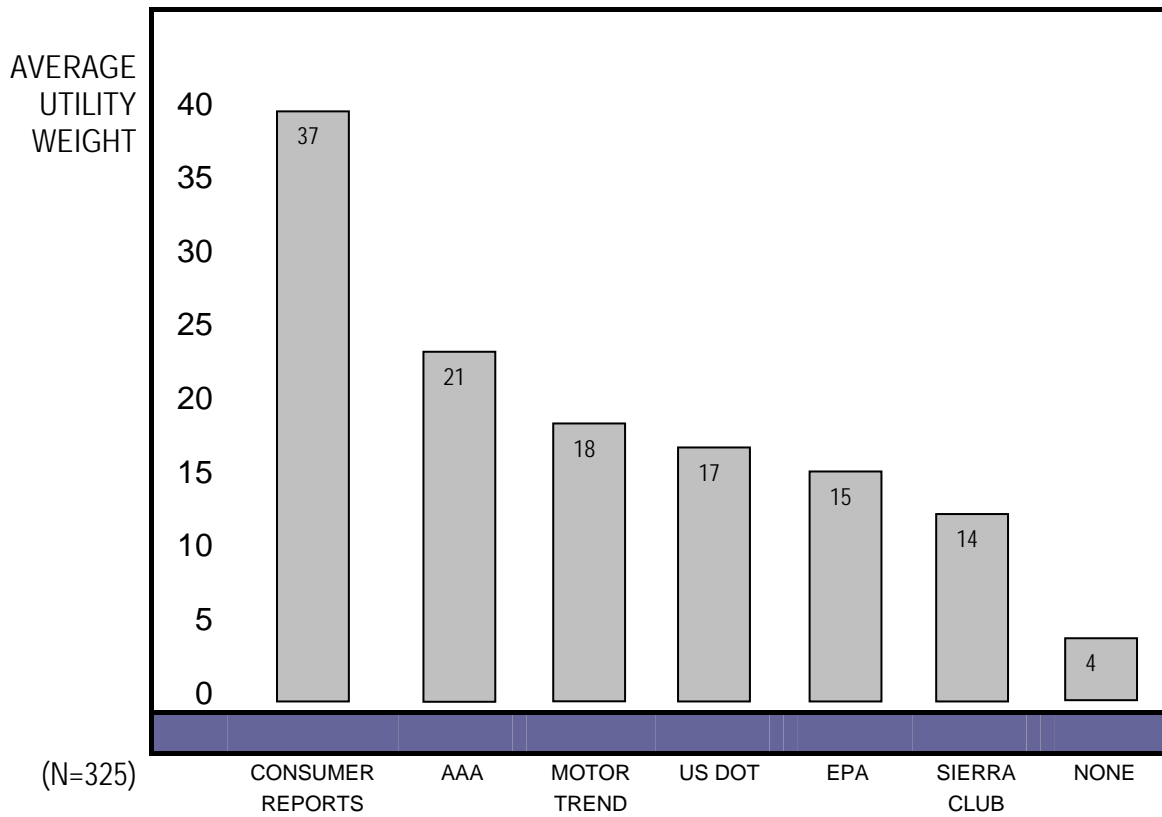


Figure 11  
**ATTRIBUTE IMPORTANCE**  
**- ENERGY SOURCE -**

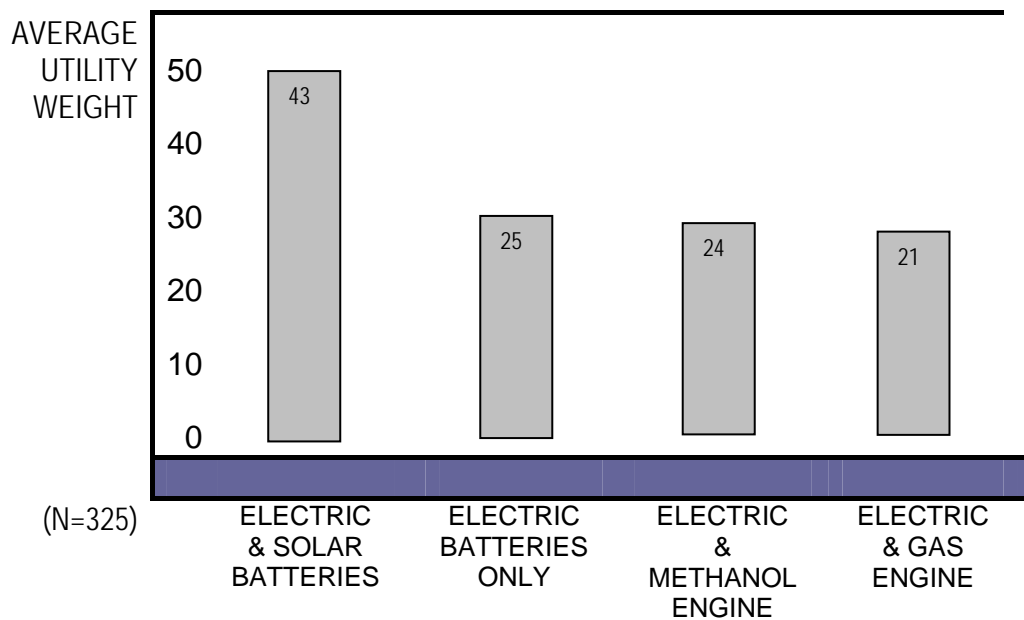


Figure 12  
**ATTRIBUTE IMPORTANCE**  
**- INTERIOR -**

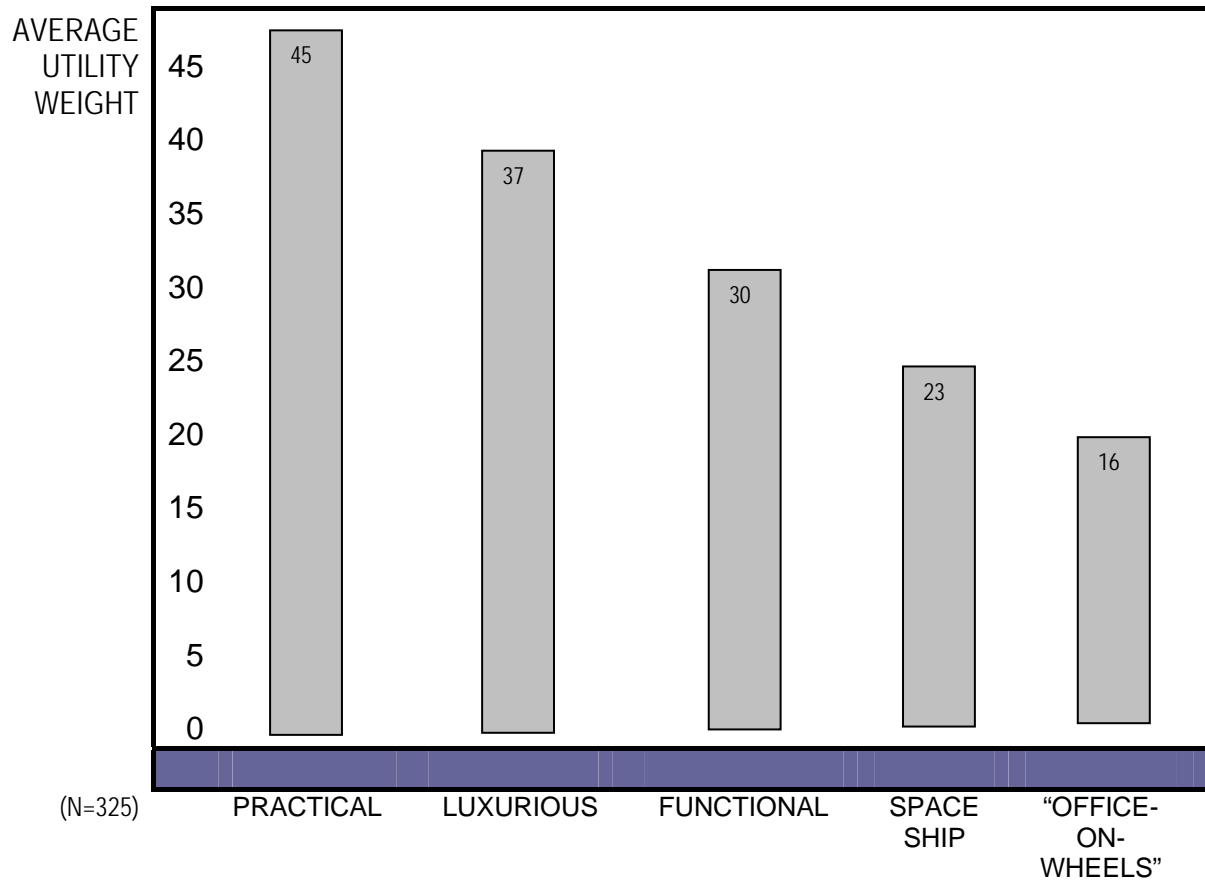


Figure 13  
**ATTRIBUTE IMPORTANCE**  
**- TAX REBATE INCENTIVE -**

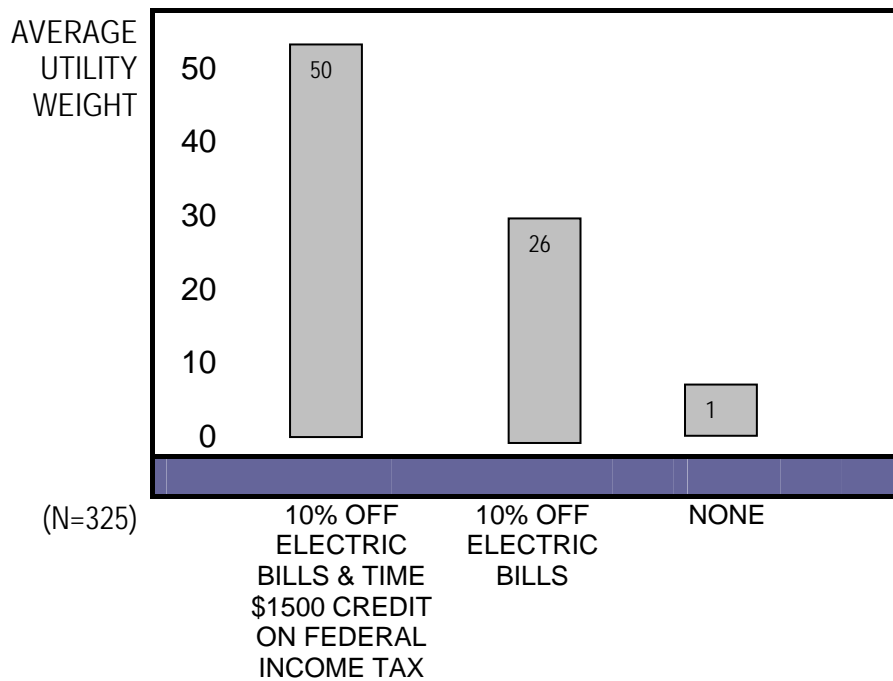




Figure 14  
**ATTRIBUTE IMPORTANCE**  
**- OPERATING COSTS OVER 5 YEARS -**

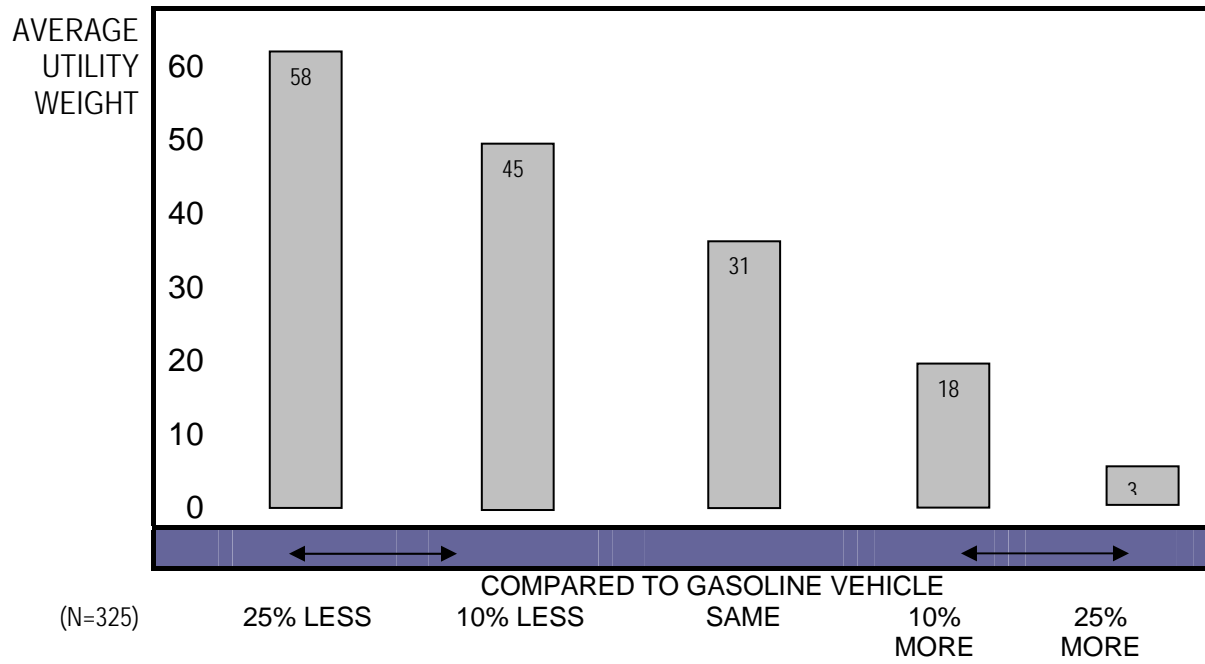


Figure 15  
**ATTRIBUTE IMPORTANCE**  
**- PURCHASE PRICE -**

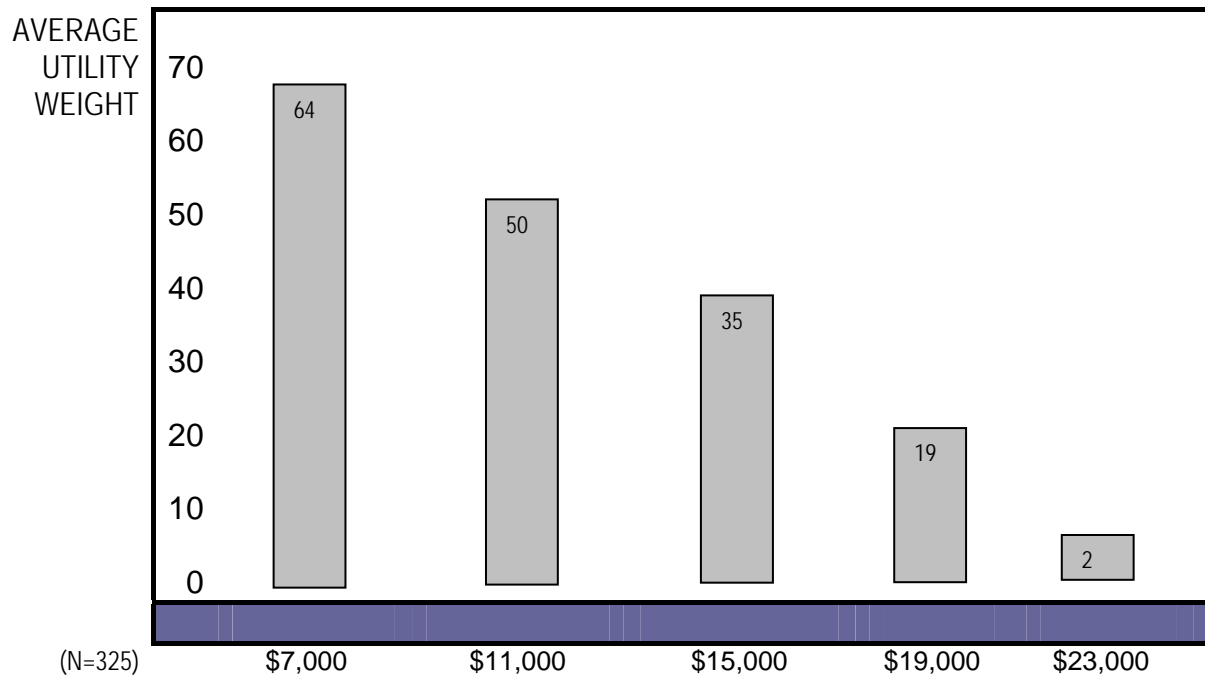


Figure 16  
**ATTRIBUTE IMPORTANCE**  
**- BATTERY RECHARGE TIME -**

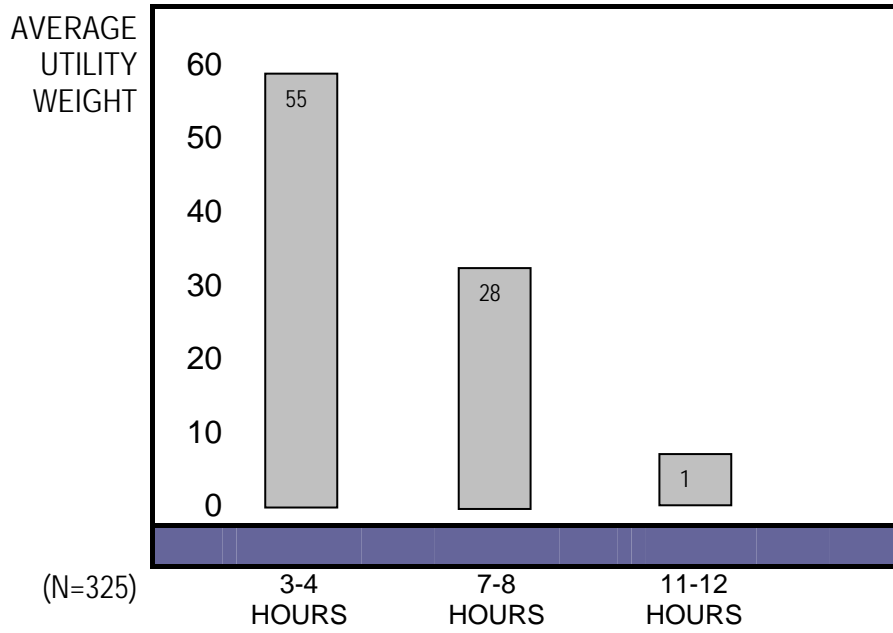


Figure 17  
**ATTRIBUTE IMPORTANCE**  
**- SAFETY SPECS -**

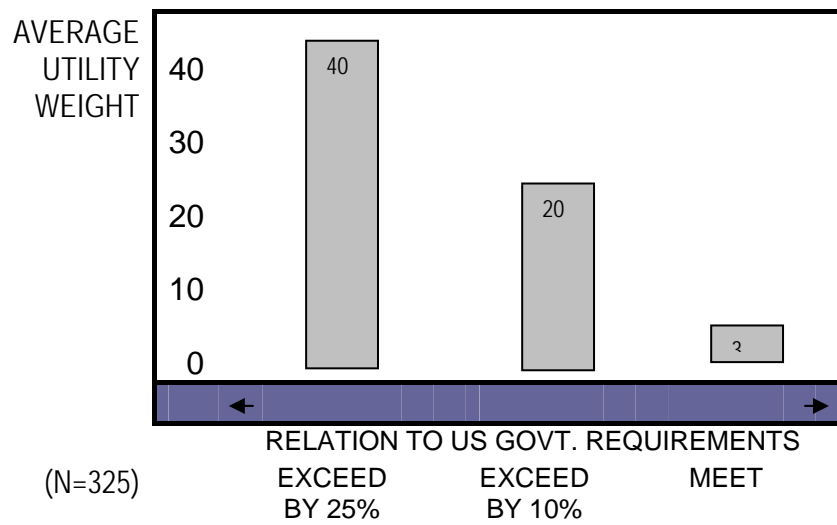


Figure 18  
**ATTRIBUTE IMPORTANCE**  
**- SEATING CAPACITY -**

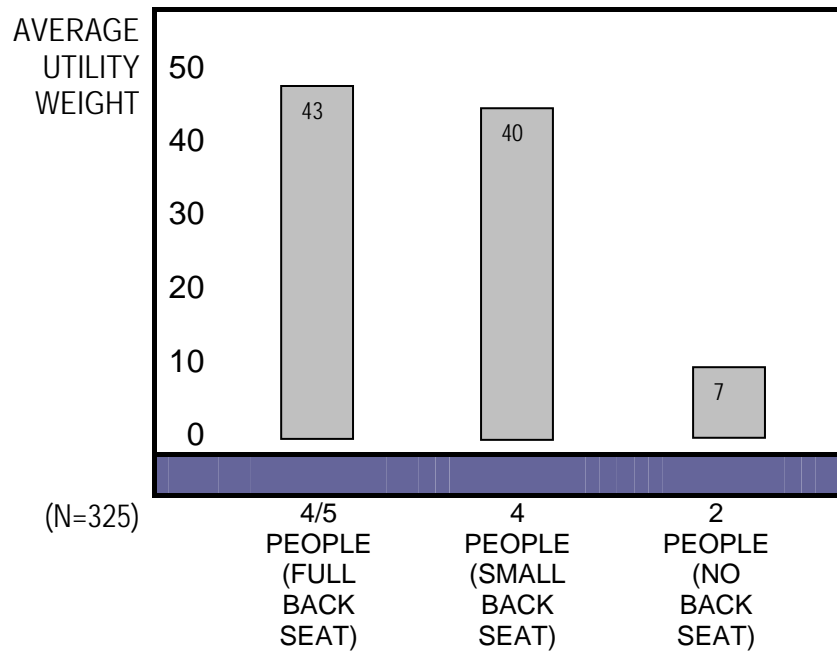


Figure 19  
**ATTRIBUTE IMPORTANCE**  
**- STYLING -**

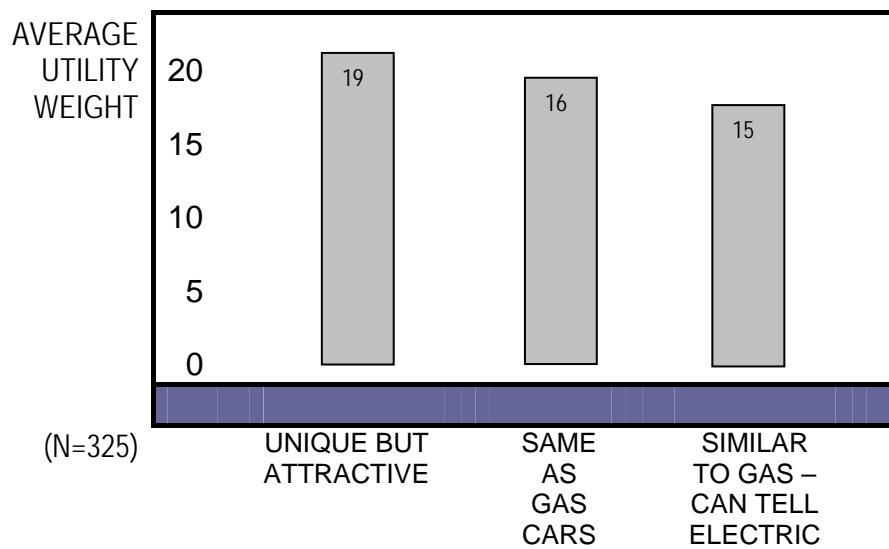


Figure 20  
**ATTRIBUTE IMPORTANCE**  
**- REDUCES TOXIC EMISSIONS -**

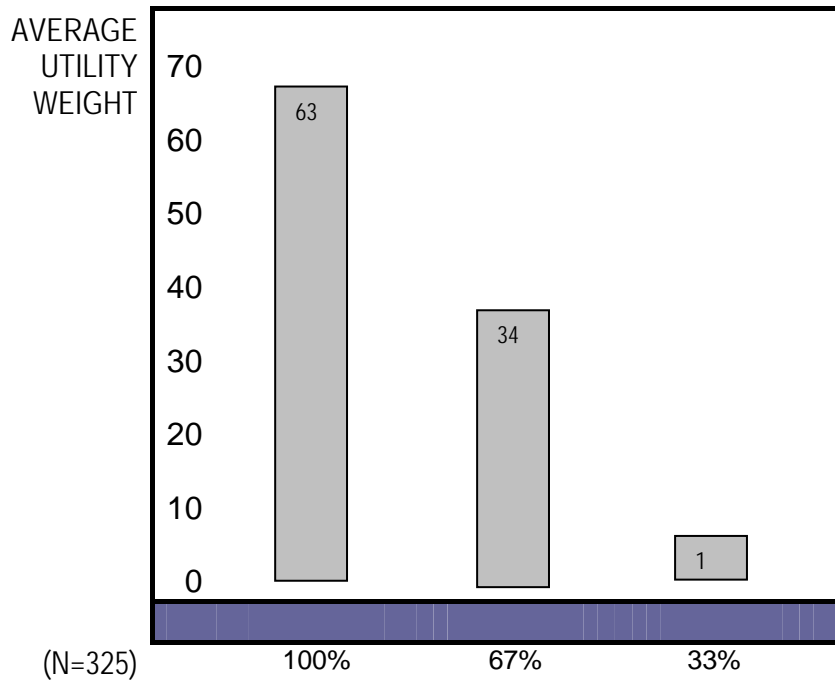


Figure 21

**Group 1. Comfort and Space Orientation:**

This group places an excessive significance on getting high-end conventional (ICE) features....

Seating Capacity  
 Air Conditioning  
 Cargo Space  
 Battery Range  
 Interior Design

**Group 2. Speed, Time and Low Cost Orientation:**

This group places special relevance to fast performance and low cost issues.....

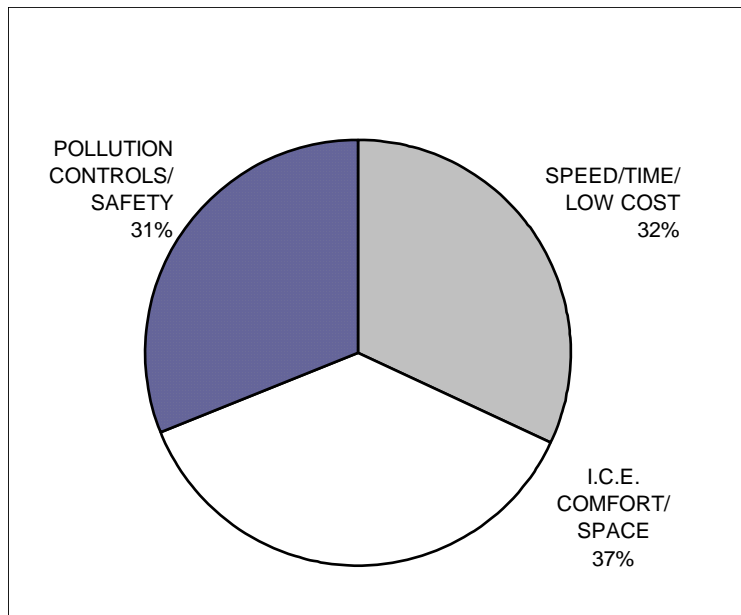
Acceleration  
 Top Cruising Speed  
 Low Operating Costs  
 Fastest Recharge Time  
 Lowest Purchase Prices

**Group 3. Pollution Controls and Safety Orientation:**

This group places extraordinary emphasis on pollution and safety factors....

100% Reduction in Emissions  
 Fuel Versatility/(Electric and Solar)  
 Safety Specifications >Government Endorsements  
 Safety Features

**CLUSTER GROUP – FAVORITE PRIORITIES**



(N=325)

Figure 22

|   | CLUSTER GROUP PROFILES |                                      |                                     |   |
|---|------------------------|--------------------------------------|-------------------------------------|---|
|   | TOTAL<br>(325)         | I.C.E.<br>COMFORT/<br>SPACE<br>(121) | SPEED/<br>TIME LOW<br>COST<br>(103) | POLLUTION<br>CONTROLS/<br>SAFETY<br>(101) |
|   | %                      | %                                    | %                                   | %   |
| NORTHERN CA   | 52                     | 60                                   | 45                                  | 50  |
| SOUTHERN CA   | 48                     | 40                                   | 45                                  | 50  |
| MALES   | 47                     | 41                                   | 61                                  | 42  |
| FEMALES   | 53                     | 59                                   | 39                                  | 58  |
| AGE (AVERAGE)   | 41.5 YRS               | 39.4 YRS                             | 43.9 YRS                            | 41.6 YRS                                  |
| MARRIED   | 64                     | 80                                   | 52                                  | 57  |
| SINGLE FAMILY HOME  | 64                     | 73                                   | 54                                  | 64  |
| INCOME (AVERAGE)  | \$70,800               | \$70,300                             | \$66,400                            | \$76,000                                  |
| POST GRAD SCHOOL  | 34                     | 35                                   | 35                                  | 31  |
| # VEHICLES OWNED (AVERAGE)                                    | 2.6                    | 2.5                                  | 2.5                                 | 2.7                                       |
| # MILES PRIMARY   | 16,300                 | 16,700                               | 16,600                              | 15,400                                    |
| # MILES SECONDARY   | 10,600                 | 11,000                               | 9,700                               | 14,000                                    |
| AUTO CLUB MEMBER  | 71                     | 74                                   | 66                                  | 73  |
| CONTRIBUTED VERY<br>SIGNIFICANT TIME &/OR MONEY<br>TO ECOLOGY | 54                     | 53                                   | 47                                  | 62  |

Figure 23

| ATTRIBUTES                   | BASE CASE DEFINITIONS                            |  |  |  |
|------------------------------|--|--|--|--|
|                              | SMALL &<br>SPARTAN                               | SMALL &<br>COMFORTABLE                                     | MID-SIZED  |  |
|                              |  |  | LOW END  | HIGH END                                     |
| SEATING CAPACITY             | 2 (No Back Seat)                                 | 4 (Small Back Seat)  | 4/5 (Full Back Seat)   | 4/5 (Full Back Seat)                         |
| STYLING                      | Same as ICE                                      | Similar to ICE   | Same as ICE  | Similar to ICE                               |
| TOP CRUISING SPEED           | 55 MPH   | 70 MPH   | 70 MPH   | 85 MPH                                       |
| BATTERY RANGE                | 100 Miles  | 150 Miles  | 150 Miles  | 200 Miles                                    |
| PURCHASE PRICE               | \$7,000  | \$11,000   | \$17,000   | \$21,000                                     |
| OPERATING COSTS (Over 5 yrs) | 25% Less than ICE                                | 10% Less than ICE  | 10% Less than ICE  | 10% Less than ICE                            |
| INTERIOR                     | Functional                                       | Luxurious  | Practical  | Luxurious                                    |
| CARGO SPACE                  | 2-3 Grocery bags or 1 large or 2 small suitcases | 5-6 Grocery bags or 2 medium or 1 large & 1 small suitcase | 5-10 Grocery bags or 2 medium or 1 large & 1 small suitcase or several large suitcases | 8-10 Grocery bags or several large suitcases |
| ELECTRIC PACKAGE             | No   | Yes  | No   | Yes  |
| AIR CONDITIONING             | No   | Yes  | No   | Yes  |
| TAX INCENTIVES/REBATES       | No   | No   | No   | No   |
| AIR BAGS & ABS               | No   | No   | No   | Both   |
| REDUCED EMISSIONS            | Reduces by 100%                                  | Reduces by 100%  | Reduces by 100%  | Reduces by 100%                              |
| POWER SOURCE(S)              | Electric batteries only                          | Electric batteries only                                    | Electric batteries only  | Electric batteries only                      |
| RECHARGE TIME                | 7-8 Hours  | 7-8 Hours  | 7-8 Hours  | 7-8 Hours                                    |
| ACCELERATION                 | Barely acceptable                                | Comparable to average ICE                                  | Comparable to average ICE  | Exceed US Gov't requirements by 10%          |
| SAFETY SPECS                 | Meet US Gov't requirements                       | Exceed US Gov't requirements by 10%                        | Meet US Gov't requirements   | Exceed US Gov't requirements by 10%          |
| ENDORSEMENTS                 | DOT  | DOT  | DOT  | Consumer Reports                             |

Figure 24  
- **BASE CASE SIMULATION -**  
- **(4 PRODUCT SCENARIO)**

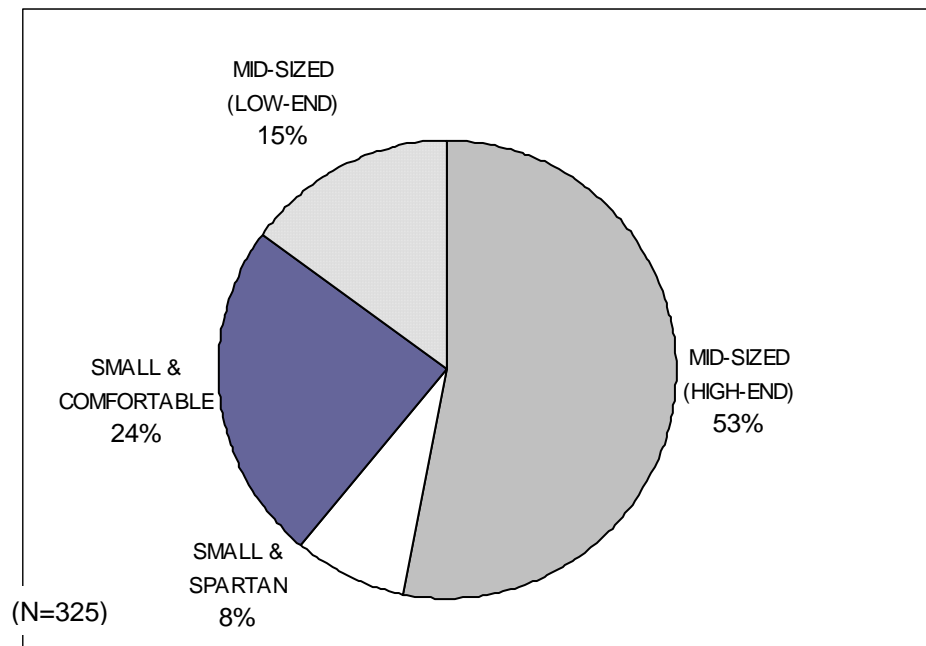


Figure 25  
- **LOW-END SIMULATION -**  
- **(3 PRODUCT SCENARIO)**

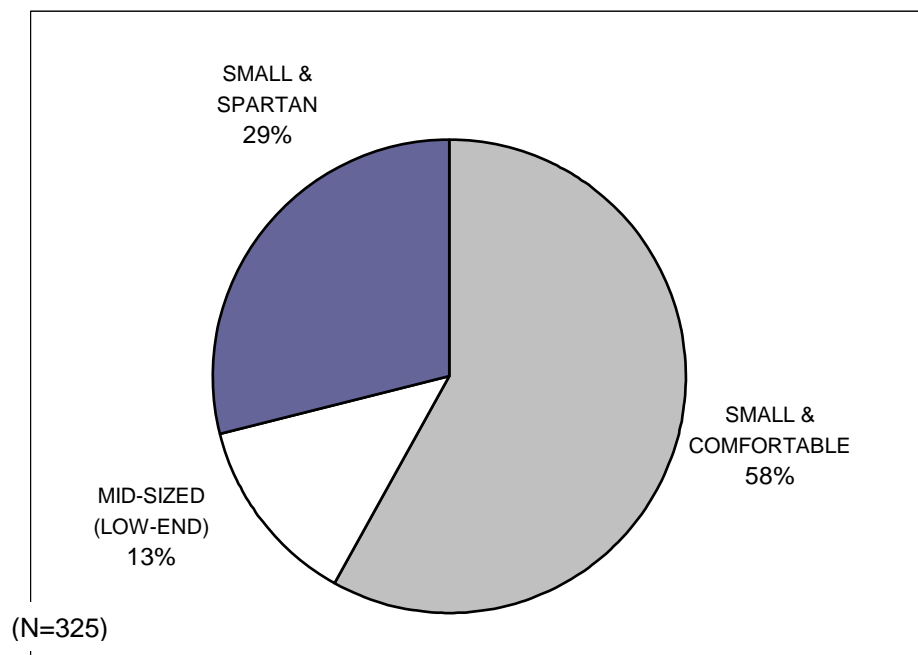


Figure 26  
**- HIGH-END SIMULATION -**  
**(3 PRODUCT SCENARIO)**

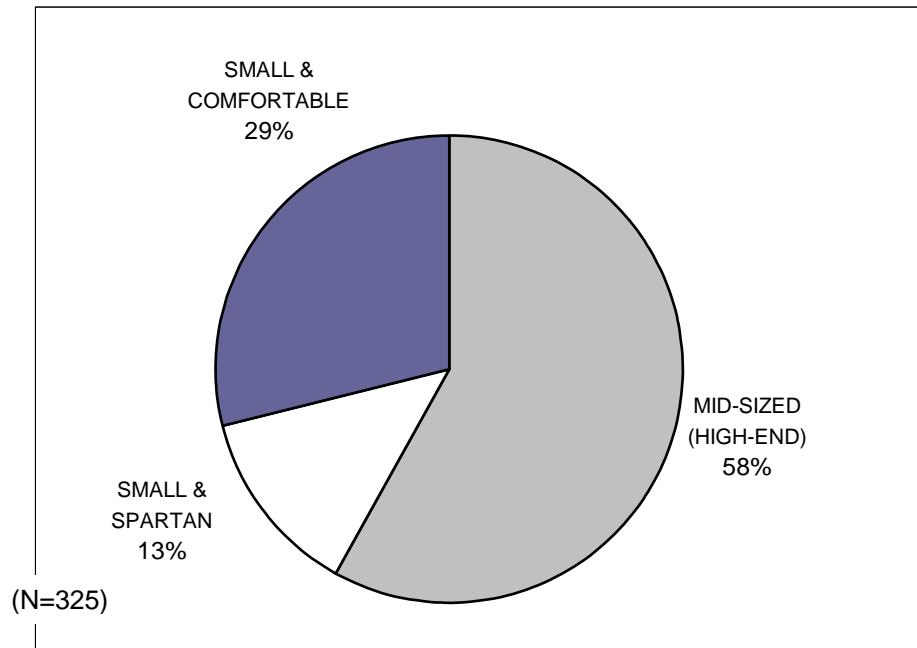


Figure 27  
**- WHAT IF? SIMULATIONS -**

